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Cover: "Tree Swallows" by Peter Karsten of Calgary

VIEWS FROM THE EDITOR

by Martin K. McNicholl, Associate Editor

THE CANADIAN NATURE FEDERATION - With increasing pressures on wilderness, wildlife and flora in Canada and around the world, those of us who are truly interested in nature must unite our voices in a strong, but reliable and reasonable pressure group for nature. With this thought in mind I would urge all readers of the Alberta Naturalist to join the young but vibrant Canadian Nature Federation. During the short life of the Federation an impressive array of accomplishments have been successfully undertaken. The Federation has managed to produce the superb quarterly magazine Nature Canada and has been represented at several hearings and special meetings. CNF is represented provincially by designated naturalist organizations which appoint a Director to the CNF Board. In turn, CNF is represented on the International Union for the Conservation of Nature (IUCN). Can such an organization really be effective? I think it can, and a recently published booklet "The Canadian Nature Federation - Past, present and future" supports that view. The Federation has done much already, but in order to expand activities further a great infusion of money, in the form of new memberships, is needed now. Nature Canada is well worth the annual dues alone - so I urge all FAN members not currently members of CNF to join now. And please advise, cajole or coerce your friends into joining, too. (George Scotter's technique of simply carrying around a copy or two of Nature Canada and showing it to people can work wonders.) Membership fees per annum are: $8.00 (individual), $10.00 (family), $15.00 (sustaining), $30.00 (active), $100.00 (supporting), $1000.00 (contributing). Life memberships are also available at $250.00. The Federation's business address is CNF, 46 Elgin Street, Ottawa, Ontario K1P 5K6.

INGLEWOOD BIRD SANCTUARY

by Carol J. Robinson
Grp. Box 3, 23rd St. & 9th Ave. SE, Calgary, Alberta

Inglewood Bird Sanctuary is located along the Bow River, just south of 9th Avenue on 23rd St. SE in Calgary. The majority of the approximately 80 acres encompassed by the Sanctuary are riverine forest dominated by balsam poplar. A lagoon fed by underground springs and

seepage from the Bow River runs through the centre while the north-western portion is open pasture.

The land now occupied by the Sanctuary was first settled by Colonel James Walker of the NWMP who established a sawmill on the site in 1882 after leaving the "mounties". His business flourished and in 1910 he built the large brick home which remains to this day.

In 1925 George Pickering, a naturalist and former park warden from Banff, leased part of the "Walker Estate". Under his care the Sanctuary become well-known and, by 1933, was acknowledged as the only winter sanctuary for waterfowl in Canada and the largest bird sanctuary within the limits of a city anywhere in the Dominion.

In 1953 the land was purchased by Ed Jeffries. Upon Mr. Pickering's retirement in 1955 Jeffries leased it to the Alberta Fish & Game Association who held the lease until 1967. At that time the organization moved its offices to Edmonton and could no longer maintain the Sanctuary. At about the same time concern was expressed regarding the potential hazard created by the wintering waterfowl for aircraft landing at McCall Field. Consequently, no attempt was made to continue feeding the ducks. During the next few years the condition of the Sanctuary deteriorated. In the spring of 1970 The Calgary Field Naturalists' Society presented a brief to Calgary City Council recommending that the area by purchased by the City and maintained as a natural park; 2.4 acres, including the house were then purchased by the City. Subsequently, the City has acquired the remainder of the area.

The main floor of the Walker house has been renovated to include a classroom, office, washrooms and display areas. The classroom is used by schools, cub and scout troops, and by the Recreation Department which conducts many courses on various aspects of natural history. The display area contains a collection of mounted birds on loan from the Riveredge Foundation.

The current list of birds which have been recorded at the Sanctuary numbers approximately 210 species. During the nesting season 40-45 species are present. During spring and fall migrations considerably more species may be seen. The Sanctuary is one of the best places in Calgary to take in fall warbler migration. Feeders are maintained year-around, so there is no lack of birds during the winter.

The Sanctuary has much to offer to non-birders, as well. More than 270 species of plants have been identified within its boundaries. Several mammals are also seen regularly, including deer, muskrat, beaver, weasel, skunk, vole, deer mice and varying hare. Brook Trout spawn in the lagoon, a painted turtle was regularly seen this summer, and butterflies and moths are plentiful. Unfortunately, so are

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mosquitoes, but it is a small price to pay for a walk in the woods practically in the heart of Calgary.

The Sanctuary is open from dawn to dusk, year around. Check-Lists of the birds and plants of the area have been compiled by Harold Pinel, naturalist for the Parks and Recreation Department. Copies may be obtained, free of charge, at the Sanctuary office or from the City of Calgary, Parks and Recreation Department.

(Editor's Note: There are a number of places in Alberta which most out-of-towners know by name only, such as Whitemud Park, the Nature Preserve in Lethbridge, Gaetz Lake Sanctuary, etc. We would welcome articles, such as the preceeding, for the benefit of those unfamiliar with the area wishing to visit these locations.)

TEACHER'S CORNER: WHAT GOOD ARE FALLEN LEAVES?

by Joy Finlay
Site 9, RR #2, Sherwood Park, Alberta T8A 3K2

Autumn is the season to notice changes taking place all around us. It is a time to view some of the most beautiful landscape painting ever made. Fruits are ripe and plants are forced to close up shop for another season. There was a time when Jack Frost was given credit for the colourful autumn scenery - but now we know it has something to do with our earth being a solar-dependent ship rotating on a tilted axis. As days get shorter, there is less light for the manufacture of chlorophyll. Chlorophyll, a pigment which is "the green Magic" in plants, can only be produced in the presence of light. Other pigments such as Xanthophyll (yellow) and Carotin (orange) can be produced in the dark. Therefore, when more chlorophyll is used up than can be produced, the other pigments become more predominant in colouring the leaves.

When the leaves have completed their work for the season, they are discarded and the broadleaved trees will remains dormant during the energy crisis of winter. But notice how ready they are for renewing the food-making process in the spring. As one youngster phrased it, next year's leaves are there in the leaf buds, tucked in their sleeping bags (bud scales) until the sun "wakes" them up in the spring.

Now what about all the leaf litter - what good is it? Leaf litter protects topsoil from washing away. Decaying leaves help produce the spongy humus that conserves water by absorbing as much as three times its own weight. Leaf litter, like rotten logs and soil, serves as a refuge for an abundance of tiny life forms, including slugs, snails, spiders, beetles, mites, ants, milipedes and centipedes. Loose fallen

leaves are in fact an insulating blanket.

Fallen leaves soon begin to serve new purposes. Left to nature, they are not wasted. Weather, bacteria, fungi, insects and other agents of decay working in the leaf litter recycle vital nutrients into the soil - it is nature's fertilizer, a good example of resource conservation.

Suggested activities:

Enjoy the colourfulness of fallen leaves by taking children on a 100-inch hike through them, on hands and knees of course; and from an imaginary perspective of an animal that is only 1 inch high!

Or present an opportunity for developing descriptive language through a "crunchy" experience by proceeding blindfolded over a blanket of fallen leaves.

To expand from a sensory experience to a quantitative study, try a leaf count per year and area. Have students measure and mark a large square (10'x10'?) in a treed area. Randomly select a square foot area in it and count and identify all the leaves that have fallen in it this year. Then count and identify all the trees in the large square. Calculate number of leaves in the large square and then number of leaves per tree. A surprising number of leaves are produced by each tree. If in a natural area, or where leaves have not been raked up other years, encourage students to find the newest and the oldest fallen leaf; then look for signs and consider the process of leaf deterioration. What happens to all the dead leaves each year? What are the agents of decomposition? What about compost piles in gardens? A thoughtful youngster suggested that the falling leaves and the recycling of their nutrients was similar to trees paying rent.

For conceptual integration, consider the process of change. There are so many kinds of change taking place - daily, seasonal, historical, geological, quantitative, qualitative. Our earth is a constantly changing dynamic system. We need more appreciation and understanding of the kinds of change - natural, cultural, technological - so we may better contribute to the kinds of changes that make for a viable, health community in which to live.

Every blade in the field,
every leaf in the forest
lays down its life in its season
as beautifully as it was taken up.

- Henry David Thoreau

LICHENS AND POLLUTION IN THE CITY OF CALGARY

by Patrick John Scholefield
Dept. of Biology, University of Calgary, Calgary, Alberta

Introduction

Lichens, because of their morphology, have proved to be very useful as indicators of atmospheric pollution. Almost 100 years ago the reduction of these non-vascular plants in major European cities was observed (Hale 1970). In some large cities such as London, Paris, Stockholm, Bonn, and even Montreal in Canada, lichens have almost disappeared completely. These zones are known as "lichen deserts". However, some lichen species show remarkable resistance to man-made air pollution. Such a toxitolerant species is Lecanora conizaeoides, which has been found to increase in density the closer the industrial centre of Newcastle, England, is approached (Gilbert in Barkman 1968).

Lichens are a symbiotic union between an alga and fungus, being called 'lichenized fungi' by early lichenologists. The fungus, or mycobiont, is a member of either the Ascomycete or Basidiomycete. The alga, or phycobiont, can be either a member of the green or blue-greens, the former being the most common. The union of these two organisms produces a plant which has a distinctive morphology, unlike that of individual fungi or algae. The mycobiont can reproduce sexually or asexually, but the phycobiont can only reproduce asexually. The formation and development of a new lichen can only ensue if the phycobiont and mycobiont, after dissemination, come together. For some unknown reason each of these symbionts has never been found to grow independently.

Nutrients are absorbed from the atmosphere. Though some species of lichen produce rhizines, no nutrients are known to be parasitized from the substrate. Unlike any other plant, lichens lack a true epidermis and wax cuticle, and are susceptible to adsorbtion of toxic materials in the atmosphere. Selective absorption of nutrients is not possible, and many substances, foreign to the normal chemical pathways, build up in the plant body. These foreign chemicals include man-made atmospheric wastes such as sulphur dioxide. Eventually a stage is reached where these chemicals become toxic to the lichen. The concentration of atmospheric pollution has a direct relationship with the longevity of the plant.

LeBlanc et al (1970) carried out a survey in Montreal, where they tried to relate the growth and occurrence of lichens to industrialization. They were quite successful, and were able to formulate an index of atmospheric pollution through using epiphytic lichens (lichens which

grow on trees). It was thought that this same kind of study could be applied to the City of Calgary.

Methods

During the summer of 1973, lichen specimens were collected from four sites in the city of Calgary (see map, figure 1). These sites were chosen because of their ecological similarity; each being a riverine forest composed of Populus balsamifera (balsam poplar) stands. Twenty trees were selected randomly in each stand. Each tree was sampled on the north and south sides in basal and breast height quadrats. The basal quadrat constituted the north and south sides from the ground to a height of 30 cm. Breast height was an area 20 cm. above and below a point 1.4 metres from the ground. The percent cover of each lichen species was noted in each quadrat before samples were taken. All specimens were taken to the Herbarium at the University of Calgary, where they were identified using a key to the lichens of West Central Canada (Bird 1970). For the purpose of this article only those lichens at breast height on the north side will be dealt with (cf. discussion).

Results

In analysing those data collected, the system of LeBlanc et al (1970) was followed. The frequency of occurrence was calculated by using a similar arbitrary scheme. Visual estimation is difficult, and therefore the figures obtained here have a subjective tone. The arbitrary scale of LeBlanc et al (1970) is as follows: 5, an epiphyte that was very frequent and had a high degree of coverage on most trees; 4, a species that was frequent or had a high degree of coverage on some trees; 3, a species that was infrequent or had a medium degree of coverage on some trees; 2, a species that was very infrequent or had a low degree of coverage; 1, a species that was rare and had a low degree of coverage. Once a value had been ascribed to each species on each tree the following formula (LeBlanc et al 1970) could be utilized:

$$\text{Index of atmospheric pollution (IAP)} = \frac{\frac{1}{n}(Q \times F)}{10}$$

The ecological index 'Q' was calculated for each species by adding together those lichen species accompanying each species at each site, then taking the mean of the sums of all sites. For example, Parmelia exasperatula occurred at tow sites, Bowness and Fish Creek #1. The total number of species accompanying it at each site was 17 and 19 respectively (Table 1). The mean of 36 (17 + 19/2) is equal

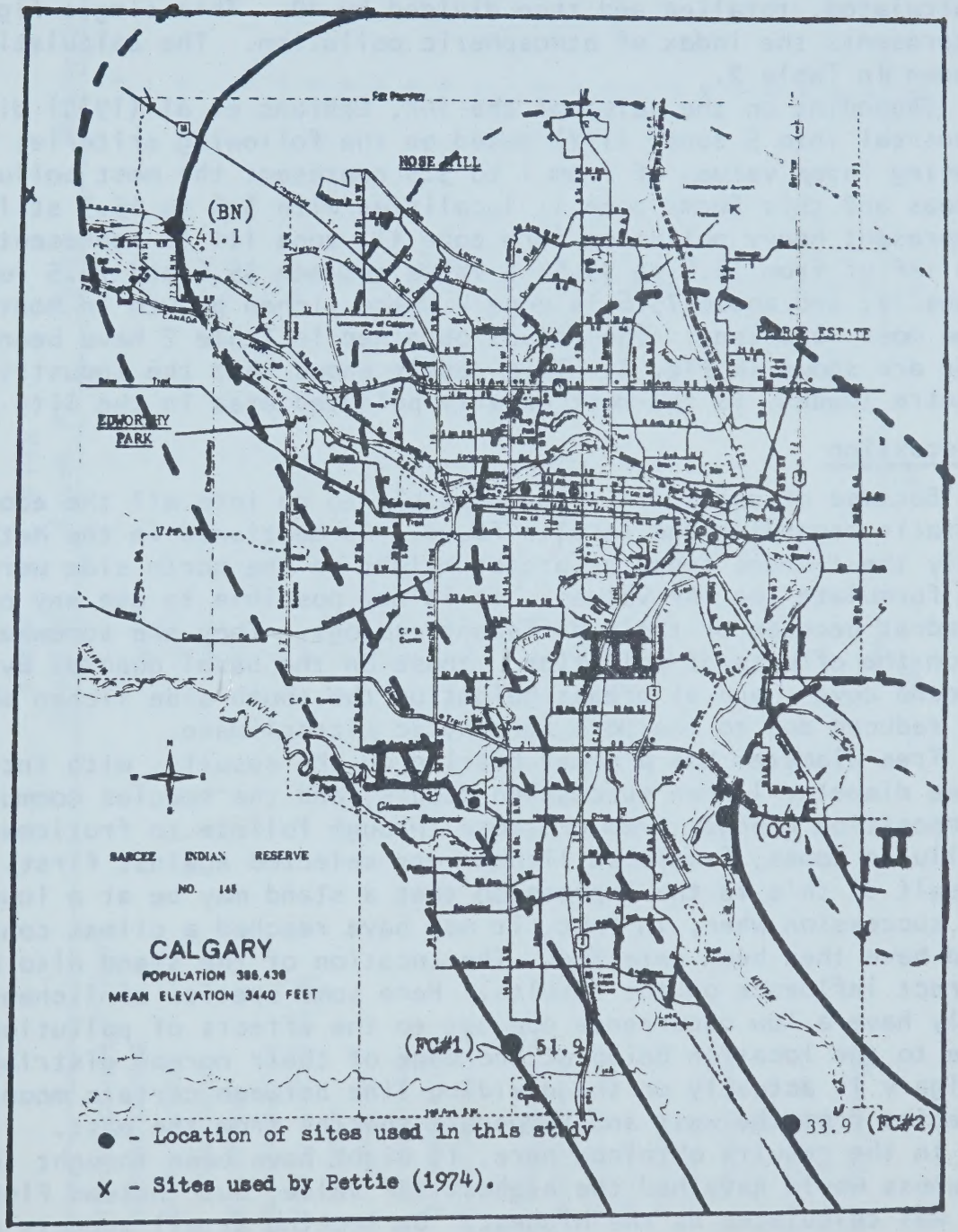

Figure I

Proposed pollution zones according to IAP values and location of the study sites in the City of Calgary.

to 18, thus the 'Q' value for P. exasperatula is 18 (Table 2). The frequency of occurrence and ecological index for each species was calculated, totalled and then divided by 10. This single figure represents the index of atmospheric pollution. The calculations are shown in Table 2.

Depending on the value of the IAP, LeBlanc et al (1970) divided Montreal into 5 zones (I-V) based on the following criteria: sites having index values of from 1 to 5.5 represent the most polluted areas and this forms zone I; localities with 5.6 to 15.5 still represent heavy pollution form zone II; zone III is represented by an IAP of from 15.6 to 35.5; a value between 35.6 and 75.5 represents zone IV; and above 75.6 is zone V where lichen growth in Montreal is the most luxuriant. The values obtained in Table 2 have been zoned and are shown in Fig. 1. This result shows that the industrial centre (Ogden) is the most heavily polluted area in the City of Calgary.

Discussion

Because of space it is not possible to go into all the ecological details regarding the results found. As mentioned in the Methods, only the lichens found at breast height on the north side were used to formulate the IAP values. It is not possible to use any other quadrat because of their different ecology. They are somewhat protected from the effects of pollution: those on the basal quadrat by the ground cover, and at breast height on the south side lichen abundance is reduced due to the more xerophytic microclimate.

Tree diameter has a great bearing on the results, with increase in tree diameter lichen succession occurs, and the species community composition changes from crustose through foliose to fruticose. In polluted zones, fruticose lichens are selected against first. The result of this is the impression that a stand may be at a lower stage of succession when, in fact, it may have reached a climax condition, and have then been retarded. The location of the stand also has a direct influence on the results. Here some species of lichens may only have a low occurrence due not to the effects of pollution, but due to the location being at the edge of their normal distribution. Calgary is actually on the dividing line between certain mountain species from the west and temperate species from the east.

In the results obtained here, it might have been thought that Bowness would have had the highest IAP value, but instead Fish Creek #1 was calculated as the highest. On looking at all aspects of the environment, it was found that Bowness may be exposed to atmospheric pollution being carried by the northwesterly prevailing winds from a number of gas extraction plants NW of the city. An independent study by Pettie (1974) using similar methods as this present study,

TABLE I. Lichen species found during the study showing sites at which they were collected.

	Fish Creek #1	Fish Creek #2	Ogden	Bowness
Anthropyrenia punctiformis	-	-	-	+
Bacidia sphaeroides	+	-	-	-
Bacidia populorum	+	-	-	-
Calicium populneum	+	-	-	-
Caloplaca cerina	+	+	+	+
Caloplaca holocarpa	+	+	+	+
Candelariella vitellina	+	+	+	+
Lecanora hageni	+	+	+	+
Lecanora impudens	+	-	-	+
Lecanora allophana	+	+	-	+
Lecidea glomerulosa	+	+	+	+
Leptogium saturninum	+	-	-	-
Parmelia sp.	+	-	-	-
Parmelia exasperatula	+	-	-	+
Physcia adscendens	+	+	+	+
Physcia aipolia	+	+	+	+
Physcia dubia	-	+	+	-
Physcia orbicularis	+	+	+	+
Physcia stellaris	-	-	+	+
Pyrenula leucoplaca	+	+	+	+
Pyrenula nitida	-	-	-	+
Rinodina pyrina +	+	+	+	+
Xanthoria falla	+	+	+	+
Xanthoria polycarpa	+	+	+	+
	20	14	14	18

TABLE 2. Index of atmospheric pollution calculation and values.

	Fish Creek #1			Fish Creek #2			Ogden			Bowness		
	F	Q	FxQ	F	Q	FxQ	F	Q	FxQ	F	Q	FxQ
Arthopyrenia puntiformis	-	-	-	-	-	-	-	-	-	1	17.00	17.00
Bacidia sphaeroides	1	19.00	19.00	-	-	-	-	-	-	-	-	-
Bacidia populorum	1	19.00	19.00	-	-	-	-	-	-	-	-	-
Calicium populneum	1	19.00	19.00	-	-	-	-	-	-	-	-	-
Caloplaca cerina	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50
Caloplaca holocarpa	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	2	15.50	31.00
Candelariella vitellina	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50
Lecanora allophana	1	16.33	16.33	1	16.33	16.33	-	-	-	1	16.33	16.33
Lecanora hageni	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50
Lecanora impudens	1	18.00	18.00	-	-	-	-	-	-	1	18.00	18.00
Lecidea glomerulosa	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50
Leptogium saturninum	1	19.00	19.00	-	-	-	-	-	-	-	-	-
Parmelia sp.	1	19.00	19.00	-	-	-	-	-	-	-	-	-
Parmelia exasperatula	1	18.00	18.00	-	-	-	-	-	-	1	18.00	18.00
Physcia adscendens	3	15.50	46.50	1	15.50	15.50	1	15.50	15.50	2	15.50	31.00
Physcia aipolia	3	15.50	46.50	2	15.50	31.00	1	15.50	15.50	1	15.50	15.50
Physcia dubia	-	-	-	1	13.00	13.00	1	13.00	13.00	-	-	-
Physcia orbicularis	5	15.50	77.50	5	15.50	77.50	1	15.50	15.50	5	15.50	77.50
Physcia stellaris	-	-	-	-	-	-	1	15.00	15.00	1	15.00	15.00
Pyrenula leucoplaca	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50
Pyrenula nitida	-	-	-	-	-	-	-	-	-	1	17.00	17.00
Rinodina pyrina	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50
Xanthoria fallax	4	15.50	62.00	4	15.50	62.00	1	15.50	15.50	2	15.50	31.00
Xanthoria polycarpa	1	15.50	15.50	1	15.50	15.50	1	15.50	15.50	2	15.50	31.00
			519.30			339.30			214.00			411.33
	IAP = 51.93			IAP = 33.93			IAP = 21.40			IAP = 41.13		

obtained an IAP value of 45.9 for a location approximately five miles northwest of the Bowness site of this study. (Pettie (1974) also had a site in Ogden, which produced an IAP value of 11.10.) Fish Creek #1 is possibly protected by an escarpment on the north side which could deflect a certain amount of air pollution from the area. Ogden received the lowest value, 21.4, and this was to be expected, as the stand is within the Foothills Industrial Park.

Generally, it can be seen that as one approaches the centre of the city of Calgary, the IAP value is reduced. No lichen desert was found, but that is not to say that one does not exist.

Barkman (1968) says that epiphytic deserts, and thus pollution, increase progressively in size with the size and population of towns. By the turn of the century the population of Calgary is predicted to reach 1,000,000. With the increase in population, an increase in lichen deserts can also be predicted. This, by definition, implies an increase in atmospheric pollution.

Conclusion

In many cities it has been found that lichen abundance correlates well with the concentration of atmospheric pollution: the greater the pollution the less the abundance of lichens. It is possible, therefore, to determine IAP values, and from them estimate the concentration of pollutants.

In this day and age, with the increase in the human population and industry, pollution is going to play a decisive role in man's future. Human health is affected by the increase in atmospheric wastes. de Villiers (1972, in Crisis, Ed. R.M. Irving & G.B. Priddle) gives an excellent account of the effects of air pollution on health. He cites a number of instances where pollution has been attributed to a greater mortality rate. For example, in London, England, in 1952, a temperature inversion lasting four days over the southeast of the country resulted in an excess over expected mortality of approximately 4,000 deaths. The greatest number of deaths and illnesses occurred among the elderly and in those with prexisting cardio-respiratory diseases or disabilities. de Villiers (ibid) also gives information on the stages in the measurable effects of air pollution on health.

Pollution not only effects the health of man, but all aspects of the environment. Vascular plants are affected; mammals carry large amounts of alien chemicals in their body, especially carnivores at the top of the food chain. Birds suffer a great deal: the effects of DDT on the falcons is a well-known fact. However, the effects do not show immediately. In lichens we have a fairly quick indication of a deteriorating environment. These plants were, at one time, ubiquitous, but with the

increase in industrialization, they are disappearing from many areas. They will not recolonize an area until the pollution levels are reduced to tolerable levels. An initial study of the kind described in this article can set a base line, where future examinations of the same area will show whether the atmospheric pollution is increasing or decreasing. Many biologists have recommended that lichens be used officially as indicators of pollution. Their ubiquitous nature and susceptibility to such conditions makes them an ideal mechanism for monitoring the levels of atmospheric wastes. The results of this study do show that this is possible in the city of Calgary. However, many more sites are required. Sites such as Edworthy Park and Inglewood Bird Sanctuary could be used. The greater number of sites would then enable a detailed pollution map of Calgary to be compiled, showing which areas should be checked for high pollution levels. It may also indicate the pollution sources. Calgary does have a pollution problem, which should be checked now before it gets out of hand.

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OVERHEARD (39)

"There is no such thing as a good or bad species. A species may get out of hand, but to terminate its membership in the land by human fiat is the last word in anthropomorphic arrogance."

- Aldo Leopold

AN EXPERIENCE OF HAND-RAISING TREE SWALLOWS

by Mrs. N. Van Mechelen
4015 Aspen Dr. W., Edmonton, Alberta

In early May of 1973 a pair of tree swallows returned to a nest box at our residence. The pair hatched young on about June 20-21.

About three days after the young had hatched, a big wind and rain storm hit the city, on the night of June 23. The next morning the male swallow was around for a short while. We realized the young had been abandoned when we saw house sparrows entering the nesting box. For the rest of the day we kept watch, chasing sparrows away, hoping the adult swallows would return. By nightfall we took the nesting box down and found five small swallows. Their eyes were closed and they were completely bare, pink with black on their back and wings. The little birds, huddled together for warmth, were so small I could hold them all in the palm of my hand. It was not convenient to keep them in the nest box, so we put them in a small basket, lined with soft rags. Following are notes on the progress of the swallows:

June 24: I put a handful of raw lean hamburger and boiling water through the blender, to make a paste, and fed this to the young swallows. To feed them, we filed the end of a plastic teaspoon into a point which, with meat on the end, would fit into the bird's mouths. As I fed them, the birds would from time to time wiggle backwards up to the side of the basket to defecate. I fed them every 15 minutes for the next hour and a half, then put some soft rags around them and covered the basket with a piece of cloth.

June 25: At 6:00 AM I started feeding the birds again. I put the basket under a 25W lamp, keeping it far enough away to give only a bit of warmth. We had painted the bulb black, not wanting them to be in the light constantly. Every morning I would feed them Pardec Drops (Parke, Davis & Co. Ltd.) which contained 5000 IU Vitamin A, 400 IU Vitamin D, 50 mg Vitamin C and 1 mg Vitamin B_6. The food was kept moist enough so the birds did not need to drink.

June 26: The swallows had begun growing some down. Three of the birds had grown considerably, while two were still quite small. One, the smallest, was separated from the rest for a few days to give it extra care. We named that one "Orphan Annie" and almost a week later the other small one was named "Miss Muffet".

June 27: The young birds had more down and the pinfeathers were starting to show. Some could open their eyes. I talked to the birds during feeding time and they had learned to recognize my voice. As soon

as they heard my voice, they started to cry, wanting to be fed. When they heard someone else's voice, it did not seem to affect them.

July 2: I put the swallows on a piece of carpet (any other surface was too slippery) and all the birds except Miss Muffet were hopping around. Miss Muffet could not stand on her feet - she would topple on her chest, sit on her tail or roll over on her back.

I felt something was missing in the diet and decided to add some calcium and also some greens, after reading that swallows eat bayberries during cold weather. I put a handful of raw hamburger, one hard-boiled egg, three leaves of head lettuce and boiling water through the blender. Afterwards, I stirred a dash of calcium gluconate powder (Nu-Life Biorganic Food Supplements) through the mixture. I fed this to the birds every half-hour from 8AM until 9PM. I always made enough food for two days and kept this in the fridge. At feeding time, I would take a small bit out, put it in a small thin plastic dish and let it float in warm water to take the chill off.

The first day we had the young swallows, their droppings were teardrop shape, a white jelly-like substance with the round end dark green. By now their droppings had become very thin and watery. Adding the lettuce to the food made the droppings less watery but somewhat stringy.

July 3: On that day we had the birds banded. From that date on I started to teach Miss Muffet to balance. Nothing was visibly wrong with her feet and legs. After every feeding I would put Miss Muffet on a very thin, round stick and put an index finger under her chest and the other finger under the tail to help her balance. I would take my hand away for half a second and before she could topple over, I would be holding her again. I slowly increased the seconds she was on her own and after ten days she could balance herself on the stick by holding her tailfeathers in an angle towards her body.

July 6: The 3 bigger swallows were trying to fly and can manage short distances. Annie and Muffet are still much smaller than the other ones.

July 7: One of the birds was flying through the room and becoming very shy. I could not get near, even to feed it.

July 8: With alot of patience, I managed to catch our shy swallow but it would not accept any food. We decided to take that one outside in the back yard and put it on the edge of a cardboard box on the patio table. In less than five minutes an adult swallow flew over and right away flew into the nesting box which we had put back

again. The adult bird flew out again and swooped down several times over the young swallow. The young bird and the adult flew to the top of our chimney. The adult flew away, came back shortly and hovered a few seconds very close above the young one. It appeared to be feeding the young bird. The adult then flew away and sometime later the young swallow followed. We were pretty sure this adult was one of the three adults feeding young in another nest box down the street.

July 10: In late afternoon the young tree swallows down the street left the nesting box and were flying in the yard next to ours. We could see 5-6 young ones, and released our two other big swallows, who had improved their flying inside our house. They seemed to be accepted by the other ones. Later we saw several young swallows on the telephone wire, and one adult was feeding them.

July 11: Several young swallows were sitting on our telephone wire. One flew into our yard and attempted to land on the wire. It missed, and landed on the ground. We picked it up and saw by the band that it was one of ours. We kept it for a few more days, feeding it every half-hour, trying to teach it to eat by itself. I bought Hartz Mountain Universal Food (dehydrated insects) but our swallows would not eat them. They had learned to drink, and I would feed them tiny pieces of raw hamburger off my finger. Miss Muffet had learned to fly, but because she would always land on her outspread wings and tail (sometimes flipping over on her back) she broke some of her wing and tail feathers. Although she could sit for awhile on a stick or branch, her legs were not very strong. Orphan Annie still had a hard time flying. She had grown alot but still had her pinfeathers.

July 14: We thought we saw a tree swallow in the sky and released our big swallow again. He stayed on the roof of our house. Some purple martins came and attacked him. We managed to scare the martins away. I took Annie and Muffet outside to feet and our other bird flew back to us.

July 16: Annie died suddenly. She had been able to fly short distances but had been very nervous and chirping constantly for two days. She ate normally in the morning but started to pant and beat her wings an hour later, and shortly after died. Muffet had broken so many feathers she couldn't fly anymore.

July 17: Miss Muffet's broken wing and tail feathers were pulled out.

July 19: Miss Muffet died. She started to pant and beat her wings

like Annie, but it took longer for her to die.

July 21: Our last swallow was becoming shy and would not eat anymore. For a few days we drove to the outskirts of the city, looking in vain for other tree swallows. About 4 miles outside the city limits we saw hundreds of barn swallows flying over a field. We released our swallow as close as we could get to that field. Our bird flew away and landed on a telephone wire. We waited more than half an hour but the young swallow did not fly away. We left but returned after two hours. Our swallow was still perched on the same wire, but a few minutes later it flew toward some farm buildings.

OVERHEARD (40)

Forester's Lament: "Sure it's pretty, but that wood is ready for harvest. It's growth is almost at a standstill. If we cut that timber now, it could be replaced with a young and vigorously growing forest.

But the preservationists are trying to lock it up - and they're locking up more and more land." - Arnold Ewing, Executive Vice-Pres. North West Timber Association, quoted by John J. Putman in "Timber - How Much is Enough?", National Geographic, 145C41: 484-511, April, '74.

Submitted by Martin K. McNicholl

Editor's Note: In this and other issues of the AN you will find various quotes under the heading "Overheard". These quotes are selected for a variety of reasons - some are eloquent, some humerous, some primarily of historical interest, some preposterous. Readers are welcome to submit quotes which amuse, infuriate, describe it so well or are just plain interesting. Send your favourites to Martin K. McNicholl or Virginia Lang (addresses, back page).

TREE SWALLOWS ACCEPT SECOND BROOD

by Hardy Pletz
6915-87 Ave., Edmonton, Alberta

On the morning of June 26, 1973, before we both left for work, our pair of tree swallows was feeding their young as usual. When we got home from work that night we noticed a sparrow was hanging around the nest and nesting material had been hauled into the house. Whatever happened to the two adult swallows in a period of 8 hours is sure a bewildering thing. I decided to investigate so opened up the bird

house and found five young huddled together with nesting material placed on top of them.

As it happened, my mother also had a swallow nest and upon checking found four young birds. The next morning at sunrise I added my five young banded birds to that nest to see if the pair would feed them. After placing the young birds in the nest, the adult, on returning with food, backed off from the nest - I suppose from shock of so many extra birds! I waited around to see if they would feed them and when I left that morning the adults were feeding.

To make a happy ending to this story - one week later they had all (9 young birds) fledged the nest. Everyone had survived.

HIGHLIGHTS OF SPRING, 1974, BIRD MIGRATION

PART I: SOUTHERN ALBERTA, by Virginia Lang, R.R. #1, Busby, Alberta

The traditional March waterfowl arrivals were about 1-1/2 to 2 weeks late, as compared with 1972 and 1973 arrival dates. By the 20th of April, waterfowl arrival dates begin to more closely correspond to the previous two years. In a few instances, after the 20th, traditionally later-arriving waterfowl species began arriving about one week earlier. Whistling Swans were first reported from the Calgary region on March 30 (two weeks later than the previous two years), numbers of swans peaked April 9-12, and the last were reported on May 8. Snow Geese numbers peaked on April 7 (15,000-20,000 at Milo), and were last reported on April 28.

Early reports of hawk species were, generally, 1-2 weeks later than 1972 and 1973. Two Peregrine Falcons were reported (from Cochrane, March 9 and Madden, March 24). The main movements of Bald Eagles occurred March 28-31. Golden Eagles were last reported away from nesting areas in mid-April.

Few patterns of late and early date reports are apparent in shorebird migration. The largest "date spread" in a specie's first report over the last three years is represented by the Semipalmated Plover reported by March 31 in Calgary. Early dates from 1972 and 1973 are April 30 and April 24, respectively. Some interesting shorebirds reported were a Ruddy Turnstone at Chestermere Lake on May 3, and two Hudsonian Godwits at Rockyford on April 27. Both species are seldom-reported in southern Alberta.

Early reports of gull species were 1-1-1/2 weeks later than the previous two years. One Glaucous Gull, a seldom-seen species in southern Alberta, was reported from Namaka Lake on April 25.

A Yellow-breasted Chat was reported from Seebe on June 21, con-

siderably removed from this specie's normal range, the Milk River, lower reaches of the Red Deer and Rosebud Rivers, and the Cypress Hills. An unusually late Pine Grosbeak was reported from Inglewood Sanctuary on May 11. There were four reports of Harris' Sparrows, infrequently reported during spring migration in the southern region, March 30 through May 10.

Northbound Lapland Longspurs were first reported in the Calgary region on March 28, and last seen May 4 at Longview, while the northward retreat of Snow Buntings peaked in mid-March, with the last southerly report April 30.

On the whole, spring migration for the balance of species occurred in an orderly fashion with few exceptionally late or early reports, and even fewer rare or uncommonly-reported species turning up.

PART II: NORTHERN ALBERTA - not available

It is with shock we learned of the tragic death of Loran Goulden, FAN Director and regular contributor to the AN. Loran was killed in a light airplane crash in B.C. on August 1.

His loss will be keenly felt by all Alberta naturalists. We extend our deepest sympathy to Gwen Goulden and Loran's family.

FAN NEWS, REPORTS, PROJECTS

UPCOMING FAN FIELD MEETING/DIRECTOR'S MEETING

The fall FAN meeting will be held Sept. 28-29, just south of Red Deer at Horn Hill Community Centre on Highway #42 (Pine Lake Road), 2 miles east of Highway #2 on the south side of the road. Camping is available near the community centre, with motel facilities at Red Deer. The program is as follows:

Saturday, 1:00 PM Registration and field trip to the Lewis Property Natural Area east of Innisfail.

7:00 PM Talk by Dell Harrison on "Fossils of Alberta and especially those from Horn Hill and other local sites"

9:00 PM Refreshments

9:30 PM Slide presentation by Mike O'Brien, "Dam Mad - Red Deer River Project".

The Display "The Alberta Environmental Education Scene" from the Provincial Museum will also be on view in the Community Centre along with cases of minerals and fossils.

Sunday, 9:00 AM Field Trip, drive to Pakkwaw Lake, a drained lake. Hike around small lake near Pine Lake.

12:00AM Lunch at Pine Lake Picnic Ground

1:00PM Afternoon trip to Bigelow Lake, a man-made lake near Wimborne.

Sunday, 9:00AM Alternate canoe trip down the Red Deer River from Penhold to Red Deer. Meet at the Horn Hill Hall at 9:00AM or at the Penhold Bridge Picnic Ground at 10:00AM. Some canoes will be available, but bring your own if possible. Pack a lunch. Transportation back from Red Deer will be arranged.

DIRECTOR'S MEETING - Saturday at the community centre, 10.00AM; the FAN Annual meeting will begin at 2:00 PM.

BOTANY OF THE FAN MAY 19 CYPRESS HILLS FIELD TRIP

by C.D. Bird, Univ. of Calgary, Biology Department, Calgary

After a wet, cold Saturday, we were all pleased to see the sun on Sunday morning. The weather during the ensuing main field trip was generally good and the 39 species of plants found in flower were a delight to all. Our first stop was at the end of pavement on Highway 48, 8 miles south of the park. Coulee slopes in a short grass prairie setting produced 29 species in bloom, some of the more interesting being Kittentails (Besseya cinerea) and FringeCup (Lithophragma bulbifera). After lunch we travelled north and then east for our second and last stop on the escarpment edge overlooking Reesor Lake. This spot, being higher and thus behind phenologically, produced only 20 species in bloom. A snowbank community, including lots of of Spring Beauties (Claytonia lanceolata) and Blue-eyed Mary (Collinsia parviflora) was found to be especially interesting.

GREAT GRAY OWL DRAWING WINS GRAPHIC ARTS AWARD

The print of Peter Karsten's "Great Gray Owl" which Smith Grant Mann, a Calgary litho company printed for FAN, has won first place in the black and white division of a provincial

Graphic Arts Competition.

These beautiful prints, a limited edition, are available from the corporate member natural history societies and from FAN, $2.50 each, with proceeds being divided between FAN and member clubs. A few copies are left.

FEDERAL-PROVINCIAL WILDLIFE CONFERENCE, 1974

by Martin K. McNicholl, Dept. of Zoology, University of Alberta, Edmonton, Alberta T6G 2E1

At the invitation of Gordon R. Kerr, Director of Fish and Wildlife, Alberta Department of Lands and Forests, the Federation of Alberta Naturalists was able to send a representative to the 38th Conference of Federal and Provincial Wildlife Agencies in Canada, held in Victoria, B.C., June 25-27, 1974. Since I was working on Vancouver Island at that time, and was thus the closest Director to the meeting, the executive asked me to attend. Unfortunately, constraints of time prevented my attending the entire conference, but I was able to be present for two days, and other naturalists were present the rest of the time.

In attendance were representatives of the Canadian Wildlife Service and the game, wildlife, or environment departments of each provincial government and the Yukon Territory, and numerous guests, including delegates from the U.S. Fish & Wildlife Service, Ducks Unlimited, hunting groups, and naturalist groups. Other naturalist groups attending were the Canadian Nature Federation (Al Grass), Saskatchewan Natural History Society (Lorne Scott), and the Manitoba Naturalists Society (Don McMaster). As each province chooses its own guests, some naturalist groups may not have been invited. For others, the cost of sending a delegate was prohibitive (e.g. Federation of Ontario Naturalists).

The meeting consisted of three indoor sessions, followed by one field trip day, as well as two social functions. I attended the first two indoor sessions. The first morning and third afternoon were devoted to business sessions, the second afternoon to a symposium on urban ecology, and the remaining sessions to workshops on specific areas of concern.

As I have not yet received a full report of the meeting, I shall not present a detailed report at this time. However, a few impressions and thoughts resulting from the conference are worth bringing out now. First and foremost, I regret to say that in spite of the excellent urban wildlife symposium, there is still a strong tendency among wildlife personnel to stress game species.

This bias is, however, slowly changing, as evidenced by the very existence of the symposium, and the fact that the Canadian Wildlife Service and at least four provincial governments invited nature groups to participate. I am pleased to note that the Alberta government appeared to be among the most inclined to consider "non-consumptive" users of wildlife.

Secondly, and in light of the above, should we attend at all? I feel that we should, whenever possible, for two reasons: (1) it is imperative that the naturalist voice be heard at these meetings, and (2) frequent inattendance could be construed as lack of interest and/or concern. However, it is clearly impossible for FAN to finance the sending of a delegate to, say Newfoundland, where the Conference will be next year. Therefore, we should make every attempt to send someone already close to the meeting (in some cases we will likely have members living close by) or to obtain financial help (the Saskatchewan Natural History Society was able to send a delegate through the generosity of the Saskatchewan Wildlife Federation).

Finally, discussions with other naturalist representatives emphasized the usefulness of frequent exchanges with these groups. Thus, I feel that FAN should routinely invite at least B.C. and the other Prairie Provinces to attend our annual meetings in an official capacity, and we, in turn, should attempt to have a member attend their meetings. Such contacts will help maintain close ties with our sister organizations.

PROVINCIAL BIRD BALLOTING

The results of the balloting (see Volume 4 Number 2, Alberta Naturalist) have been tallied and it has been recommended that the top candidate be nominated as the Provincial Bird. It is hoped the Cabinet will propose the candidate to the Legislature at an early date. The Alberta Emblems Act will have to be changed before anything can be official, though. An announcement can be anticipated when the legislators have considered the proposal.

OVERHEARD (41)

Rewards of a Nest-Box Project: "Ahead was a sight only a birder can appreciate: bluebirds, my bluebirds, adults and young on posts and wires, as far as the eye could see! How will those darting, hovering chittering bits of life survive the long way ahead?" - Jake Karget, Blue Jay. 32: 107.

Submitted by Martin K. McNicholl

CLUB NEWS

Buffalo Lake Naturalists' Club

The Buffalo Lake Naturalists' Club met for their June meeting at the farm home of Mr. and Mrs. Herb Kruger on the evening of June 20. Thirteen members were in attendance, as well as four visitors. It was a perfect June evening, except for king-sized mosquitoes, and the members took excursions into the surrounding countryside. The countless ponds in the district were alive with almost every variety of waterfowl, and songbirds sang from every thicket. All in all, a very rewarding evening. At dusk, everyone gathered in Kruger's backyard for a barbecued supper and a short business meeting.

The Calgary Field Naturalists' Society

The CFNS summer field trip schedule has, as usual, been quite ambitious, with trips to Sundre, Inglewood Sanctuary, Cochrane, Priddis, Plateau Mountain, and canoe trips on the Bow River and the irrigation canal.

NOTES AND NEWS

SYMPOSIUM ON WILDLIFE IN URBAN CANADA

A symposium on "Wildlife in Urban Canada" is planned, May 26-30, 1975, University of Guelph, Guelph, Ontario, to bring together specialists interested in the problems and challenges of wildlife in urban areas. Workshop sessions on the theme, panel discussions and presented papers will form part of the overall program. For further information contact the Office of Continuing Education, University of Guelph, Guelph, Ontario.

ENTOMOLOGICAL SOCIETY OF ALBERTA ANNUAL MEETING

The Entomological Society of Alberta will hold its 22nd Annual Meeting on October 4-5, 1974, at the Northern Forest Research Centre, 5320 - 122 St., Edmonton. Various papers and topics will be presented and discussed, representing a broad spectrum of interests from provincial, federal and university research and applied programs. Persons interested in attending may contact H. Cerezke (Sec.-Treas.) at the above address, or by phoning 435-7334.

GRANT GIVEN TO TRAPPING COMMITTEE

The Alberta government is contributing $7,618 to the federal

provincial committee for humane trapping. The committee was formed last year under the auspices of the federal-provincial wildlife conference in response to increasing public concern toward cruelty to animals associated with trapping.

The committee intends to coordinate, encourage and implement trapping research and development throughout Canada and to promote greater humaneness in trapping.

All provinces and territories share the budget costs of the program on a pro-rated basis, dependent on the percentage of revenue derived from fur resources. (From the Calgary Herald.)

CANADIAN WILDLIFE SERVICE BUILDING NEW WILDLIFE CENTRE IN B.C.

Construction of a new wildlife centre has begun in Creston Valley, B.C. To be built at an approximate cost of $240,000, the centre will include an exhibit hall, theatre, workshop and office. Completion is expected this summer, when a program of guided walks, campfire talks and audio-visual shows will commence. A full-scale interpretation program will begin in 1975.

Aimed at visitors and local people, it will relate the story of this distinctive natural region of Canada, the Columbia Forest Region, and of the rich and extensive Creston Valley marshes.

At present, the CWS has three other wildlife interpretation programs in operation: one in Midland, Ontario, including a 2,500-acre marsh and northern hardwood forest; one at Cap Tourmente, Quebec, centering on the greater snow goose flock which stops there during fall and spring migration; and a third program involving people in the Gaspé landscape and the seabird colony on Bonaventure Island. (From Nature Canada, 3(3): 38.)

MERLINS HATCHED IN CAPTIVITY

A pair of captive merlins successfully hatched four eggs at Black Diamond, Alberta. Mr. John Campbell, an ex-falconer now working with the Provincial Fish & Game Department, has been working on breeding problems of captive falcons for a number of years. (Mr. Campbell was the first person to hatch Peregrine Falcons bred in captivity through natural mating habits.)

OVERHEARD (42)

"When pondering the philosophy of conservation, I believe that thoughtful men must be dedicated to it; intelligent, perceptive men can be reasoned into it, but that the ardent materialists among us must be frightened into it." Werner Nagel, from Wildlife Review, Vol. VII, No. 1.

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FAN membership fees are $2.00 per year (January through December) regular, $10.00 supporting, tax deductible. Mail remittance to Mrs. Helen Schuler, Treasurer, 2630 - 22 Ave. S., Lethbridge.

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